

IN THE CLAIMS:

1. (previously presented) A method, comprising:

tracking the locations of a mobile station moving in a cellular telecommunication network in which the available capacity is not uniformly distributed, where a communication has been established between the mobile station and the cellular telecommunication network; and

scheduling data communication to or from the mobile station in accordance with the available capacity of the network at both the current location and future locations of the mobile station,

wherein the data communication to or from the mobile station at the current location of the mobile station is prioritized during scheduling when the available capacity at future locations is less than that at the current location, by giving traffic to or from the mobile station a priority while the mobile station is still in a less congested area of the cellular telecommunication network, and

wherein the data communication to or from the mobile station at the current location of the mobile station is delayed during scheduling when the available capacity at future locations is higher than that at the current location.

2. (previously presented) The method according to claim 1, further comprising:

estimating the future locations of the mobile station on the basis of the locations tracked during tracking.

3. (previously presented) The method according to claim 1, further comprising:

estimating the future locations of the mobile station on the basis of route information about the moving mobile station provided by the mobile station.

4. (previously presented) The method according to claim 1, further comprising:

estimating the future locations of the mobile station on the basis of movement patterns of the mobile station.

5. (previously presented) The method according to claim 1, further comprising:
estimating the available capacity of the network at the current and future locations of the mobile station on the basis of an estimated current and future traffic load distribution of the network in an area in which and towards the mobile station is moving.
6. (original) The method according to claim 5, wherein the area comprises cells, groups of cells, geographical areas and network nodes.
7. (previously presented) The method according to claim 1, further comprising:
estimating the data communication needs of the mobile station.
8. (previously presented) The method according to claim 7, wherein the data communication to or from the mobile station is prioritized during scheduling when the data communication needs exceed a specific amount of data to be communicated.
9. (original) The method according to claim 5, wherein the mobile station executes measurements of the traffic load distribution in the area and along the path in which it is moving, and wherein the available capacity of the current and future locations of the mobile station is estimated on the basis of the measurement results.
10. (previously presented) The method according to claim 7, further comprising:
buffering data transmitted to and from the mobile station, wherein the estimation of the data communication needs of the mobile station is performed by monitoring the amount of buffered data.
11. (original) The method according to claim 7, wherein the data communication needs of the mobile station are estimated on the basis of a transmission request from the mobile station.
12. (original) The method according to claim 9, wherein the mobile station executes the measurements according to traffic load distribution information received from the network.

13. (original) The method according to claim 1, wherein a plurality of mobile stations each having data communication needs are present in the network, and wherein the data communications of the plurality of mobile stations are scheduled in accordance with the available capacity of the network.

14. (original) The method according to claim 13, wherein the data communications of the plurality of mobile stations are scheduled in accordance with estimated data communication needs of these mobile stations.

15. (currently amended)An apparatus, comprising:

a controller ~~for tracking~~ configured to track the locations of a mobile station moving in a cellular telecommunication network where a communication has been established between the mobile station and the cellular telecommunication network, and ~~for scheduling to schedule~~ data communication to or from the mobile station in accordance with the available capacity of the network at both the current location and future locations of the mobile station,

wherein the data communication to or from the mobile station at the current location of the mobile station is prioritized by the controller when the available capacity at future locations is less than that at the current location, by giving traffic to or from the mobile station a priority while the mobile station is still in a less congested area of the cellular telecommunication network, and

wherein the data communication to or from the mobile station at the current location of the mobile station is delayed by the controller when the available capacity at future locations is higher than that at the current location.

16. (previously presented) The apparatus according to claim 15, wherein the controller is configured to estimate the future locations of the mobile station on the basis of the tracked locations.

17. (previously presented) The apparatus according to claim 15, wherein the controller is configured to estimate the future locations of the mobile station on the basis of route information about the moving mobile station provided by the mobile station.

18. (previously presented) The apparatus according to claim 15, wherein the controller is configured to estimate the future locations of the mobile station on the basis of movement patterns of the mobile station.

19. (previously presented) The apparatus according to claim 15, wherein the controller is configured to estimate the available capacity of the network at the current and future locations of the mobile station on the basis of an estimated current and future traffic load distribution of the network in the area in which and towards the mobile station is moving.

20. (previously presented) The apparatus according to claim 19, wherein the area comprises cells, groups of cells, geographical areas and network nodes.

21. (previously presented) The apparatus according to claim 15, wherein the controller is configured to estimate the data communication needs of the mobile station.

22. (previously presented) The apparatus according to claim 21, wherein the data communication to or from the mobile station is prioritized by the controller when the data communication needs exceed a specific amount of data to be communicated.

23. (previously presented) The apparatus according to claim 19, wherein the mobile station executes measurements of the traffic load distribution in the area and along the path in which it is moving, and wherein the controller is configured to estimate the available capacity of the current and future locations of the mobile station on the basis of the measurement results transmitted from the mobile station to the controller.

24. (previously presented) The apparatus according to claim 21, wherein the controller is configured to monitor buffers for buffering data transmitted to and from the mobile station, and estimate the data communication needs of the mobile station on the basis of the monitored amount of buffered data.

25. (previously presented) The apparatus according to claim 21, wherein the controller is configured to estimate the data communication needs of the mobile station on the basis of a transmission request from the mobile station.

26. (previously presented) The apparatus according to claim 23, wherein the mobile station executes the measurements according to traffic load distribution information received from the network.

27. (previously presented) The apparatus according to claim 15, wherein a plurality of mobile stations each having data communication needs are present in the network, and wherein the data communications of the plurality of mobile stations are scheduled in accordance with the available capacity of the network.

28. (previously presented) The apparatus according to claim 27, wherein the data communications of the plurality of mobile stations are scheduled in accordance with estimated data communication needs of these mobile stations.

29. (previously presented) An apparatus, comprising:

means for tracking the locations of a mobile station moving in a cellular telecommunication network where a communication has been established between the mobile station and the cellular telecommunication network, and for scheduling data communication to or from the mobile station in accordance with the available capacity of the network at both the current location and future locations of the mobile station,

wherein the data communication to or from the mobile station at the current location of the mobile station is prioritized by the means for tracking and for scheduling when the available capacity at future locations is less than that at the current location, by giving traffic to or from the mobile station a priority while the mobile station is still in a less congested area of the cellular telecommunication network, and

wherein the data communication to or from the mobile station at the current location of the mobile station is delayed by the means for tracking and for scheduling when the available capacity at future locations is higher than that at the current location.

30. (previously presented) The apparatus according to claim 29, wherein the means for tracking and for scheduling are for estimating the future locations of the mobile station on the basis of the tracked locations.

31. (currently amended) A system, comprising:

~~control means for communicating~~ a controller configured to communicate with a mobile station and a cellular telecommunications network, ~~for tracking to track~~ the locations of the mobile station moving in the cellular telecommunications network where a communication has been established between the mobile station and the cellular telecommunication network, and ~~for scheduling to schedule~~ data communication to or from the mobile station in accordance with the available capacity of the network at both the current location and future locations of the mobile station;

wherein the data communication to or from the mobile station at the current location of the mobile station is prioritized by the ~~control means~~ controller when the available capacity at future locations is less than at the current location, by giving traffic to or from the mobile station a priority when the mobile station is still in a less congested area of the cellular telecommunication network; and

wherein the data communication to or from the mobile station at the current location of the mobile station is delayed by the ~~control means~~ controller when the available capacity at future locations is higher than that at the current location.